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Christian Meske & Iris Junglas

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# Investigating the elicitation of employees' support towards digital workplace transformation

Christian Meske <sup>a,b</sup> and Iris Junglas<sup>c</sup>

<sup>a</sup>Department of Information Systems, Freie Universität Berlin, Berlin, Germany; <sup>b</sup>Einstein Center Digital Future, Berlin, Germany; <sup>c</sup>Department of Supply Chain and Information Management, College of Charleston, Charleston, SC, USA

## ABSTRACT

Digital transformation is currently one of the most prominent topics in information systems research. Existing work in this context mainly focuses on the digitalisation of business models and impacts on economy or society. However, with the transformation of business models also come significant IT-induced changes of workplace environments. In this paper, success factors of digital workplace transformation are investigated, thereby adding a micro-perspective to the ongoing research stream on digital transformation. We will show for an organisation in the wholesale industry that the expected work design characteristics have an important influence on the employees' attitude towards digital workplace transformation. In more detail, we will show that enabling employees to expect being autonomous, competent and connected at the workplace is not only vital for their expected future work performance, but also for their expected well-being in the workplace. Both of the latter, in turn, increase employees' positive attitudes towards digital workplace transformation and consequently their intentions to actively support the necessary change process.

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workplace transformation;  
future work; self-  
determination; change  
management; adoption

## 1. Introduction

In recent years, we have witnessed a rapid and ongoing digital transformation taking place, changing our economy as well as our society in fundamental ways (vom Brocke, Becker, and De Marco 2016; Trantopoulos et al. 2017; Wilms et al. 2017). While scholarly research has mainly zoomed in at the macro-level of digital transformation by looking at business models and their impact on society (e.g. Tomasula 1998; Klashorst 2000; Andal-Ancion, Cartwright, and George 2003; Zhu and Kraemer 2005; Deering et al. 2008; Gray et al. 2013; vom Brocke, Becker, and De Marco 2016) less research has been conducted at the mid-level, i.e. by looking at organisational structures and processes. Even less attention has been paid to the micro-level of digital transformation, or the individual's workplace environment and the array of new digital tools that support, or hinder, the way work is conducted.

In this study, we therefore focus on *digital workplace transformation, which we understand as a phenomenon of new technologies causing significant changes to a variety of work-related aspects: changes to how employees carry out tasks and processes, as well as changes to their social relations within the organisation, and subsequently to their overall workplace experience*. As recent literature

states, the future workplace 'focuses on how and what work is done, not where and when it is done' (Dittes et al. 2019, 1). Supporting our understanding of digital workplace transformation is the fact that the adoption of 'digital innovations', ranging from email, text, chat and call functionality, to document management tools and enterprise social media platforms, can cause 'significantly new ... ways of doing things in an organizational setting that are embodied in or enabled by IT' (Fichman, Santos, and Zheng 2014, 334). Such digital innovation artefacts facilitate communication and collaboration (Zhang et al. 2016; Ciriello, Richter, and Schwabe 2018) and may change the nature of work. While such innovations might not have an immediate visible effect on an organisation's business model, we nevertheless argue that digital transformation at the macro-level cannot materialise without digital workplace transformation at the micro-level.

As already proclaimed in the 1990s, studying digital workplace transformation at the micro-level not only has to assume an individual perspective, but also has to acknowledge that working environments have become increasingly knowledge centric and autonomous (e.g. Greenbaum and Kyng 1991; Kjaer and Madsen 1995). This includes acknowledging that work is fundamentally

social and requires intensive communication and collaboration among and between employees; it also includes acknowledging that work activities are difficult to describe upfront; and finally that tasks are carried out differently by different individuals despite using the same workplace technology (Greenbaum and Kyng 1991; Kjaer and Madsen 1995).

Since individuals are the sole arbiter of their work and determine how technologies may (or may not) be used, any intentions to accept (or not accept) digital workplace transformations as induced by digital workplace tools are initially rooted in an individual's self-determination. They are however, as we show in this paper, progressively flanked by an individual's active support and engagement in promoting the change process. More specifically, in this paper we will examine those factors that lead to favourable attitudes and intentions towards digital workplace transformation by not only looking at an employee's intentions to actively support digital transformation, but also at his or her willingness to engage in the transformational change process. Only if employees are willing to play an active role in the transformational process, i.e. if they have a desire to be involved, to have a say in the decision-making process and harbour the belief that they are able to contribute to the design of the digital workplace, only then will the technologies proposed by management for the digital workplace be accepted and the organisational change effort be deemed successful (Kaschig, Maier, and Sandow 2016).

By studying a global enterprise of more than 150,000 employees in the wholesale industry, and looking at one of its subsidiaries with 226 employees in more detail, we are able to uncover a set of intrinsic factors, including autonomy, competence, relatedness, that not only can explain performance behaviours and perceptions of well-being in digital workplace environments, but also employees' willingness to adopt the range of technologies proposed by management and to actively contribute to the change process that inevitable accompanies the introduction of new workplace technologies.

Our study differs from others in that it acknowledges the existence of a range of technologies that an individual can possibly choose from to adopt for the workplace. In contrast, the majority of prior studies has focused on contexts, in which single technologies were adopted and where perceptions of the work experiences as a whole were neglected. Also, the role of an active user in the change process has not been considered as an integral part of these models, neither as an independent nor as a dependent variable.

Our contributions are therefore threefold. First, we will be able to show that, based on management-

provided information about imminent IT-induced changes at the workplace, employees internally evaluate the planned work design characteristics and consequent work outcomes. In more detail, by utilising the theory of self-determination in determining employees' work behaviour with respect to performance and well-being, we are able to pinpoint how to influence employees' attitude and intentions regarding digital workplace transformation. Second, by proposing a new construct that captures employees' intentions to actively support IT-induced changes in their work environment, we are able to propose a variable that helps IS researchers to better explain the success of technology adoption and subsequent usage when faced with a range of tools. And third, with a focus on digital workplace transformation, we add a micro-perspective to the ongoing research on digital transformation, which has been neglected so far.

## 2. Digital workplace transformation

One of the earliest mentions of the term 'digital transformation' was at a conference in the early 1950s (Davis 1954). At the time, and during the decades thereafter (e.g. Mendelsohn et al. 1968; Georges et al. 1979; Yassine 1986), it mainly carried the idea of migrating from analog to digital, or from paper to stored media – a process also referred as 'digitization' nowadays. While too narrow in its conceptualisation nowadays, it was an important breakthrough at the time as it marked the dematerialisation of information and decoupled information from its physical carriers and storage, transmission, and processing equipment (Legner et al. 2017). It was not until the mid 1990s that the notion of what constitutes a digital transformation shifted (e.g. Epstein and Koons 1994; Tomasula 1998; Coile 2000; Klashorst 2000; Giaglis, Papakiriakopoulos, and Doukidis 2002; Andal-Ancion, Cartwright, and George 2003; Zhu and Kraemer 2005; Deering et al. 2008). With the advent of the commercial Internet, researchers noted a substantial IT-enabled change in the processes of value creation, along with the emergence of new business models and markets and focused on those aspects ever since (e.g. Ranganathan, Teo, and Dhaliwal 2011; Gray et al. 2013; de Pablos and Gayo 2019).

While there still is no universally accepted definition of digital transformation, existing descriptions mostly differ on their degree to which transformation goes beyond simple IT integration. Ranging from 'the integration of digital technologies into business processes' (Liu, Chen, and Chou 2011, 1728), to turning 'partly digitized business and society models into fully digitized business and society models' (Riedl et al. 2017, 481), to 'a

fundamental reshaping of the organization's behavior' (Moreton 1995, 149), causing 'disruptive changes in all areas of our social and economic life' (vom Brocke, Becker, and De Marco 2016, 159), digital transformation has been found to come in many shapes and forms. It is therefore not surprising that strategies for pursuing digital transformation take a broad perspective and emphasise the 'transformation of products, processes, and organizational aspects owing to new technologies' (Matt, Hess, and Benlian 2015, 339). Apart from this *macro*-perspective, we see the need to take a workplace-perspective and hence emphasise the transformation at the *micro*-level. While one might argue that adjustments to work processes do little to redefine a business model, they do, however, redefine how value is created for the organisation and as such can have a tremendous impact on the organisation as a whole.

We also argue that 'change' introduced by workplace technologies is determined by an employee's individual perceptions. Moreover, not all workplace technologies will lead to the same outcomes (Lyytinen and Rose 2003; See, Yap, and Ahmad 2019). Since organisations are inherently unique, a significant change might therefore look entirely different for one organisation when compared to another. Employees' perceptions of change, such as a 'change in a personal process of more than half the steps', a 'change in social relations affecting at least half of one's contacts or doubling the number of contacts', or 'a change in user experience involving at least 2 h per day' (Lucas et al. 2013, 373) are all manifestations that transformation is taking place, so we argue. Accordingly, we define the term 'digital workplace transformation' as *a phenomenon of new technologies causing the perception of significant changes to a variety of work-related aspects: to how employees carry out tasks and processes, to their social relations within the organisation and subsequently to their overall workplace experience*. This definition also reflects on the task-supporting technical dimension as well as the social intensity dimension, which both need to be considered when investigating future work systems (vom Brocke et al. 2018).

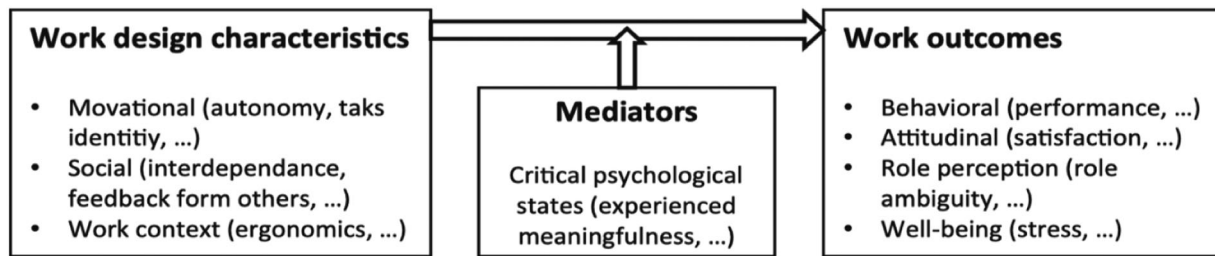
In that sense, digital workplace transformation is different from traditional adoption models in that it introduces an array of new systems at once – with the effect that it is not a question of adoption or non-adoption, but a question of workplace design as a whole. Workplace design entails designing the physical environment by utilising technological tools (traditional perspective); it also entails establishing new work practices enabled by these very tools (a more recent perspectives) (Richter et al. 2018).

### 3. Theoretical background and hypotheses development

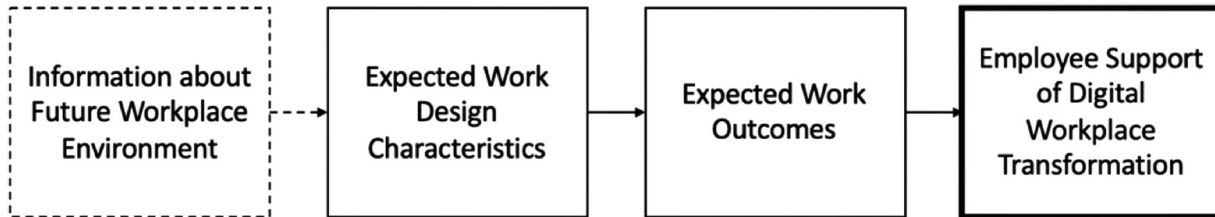
Recent research on work design and future work practices between humans and computers has emphasised the fact, that a lot of unanswered questions still remain when it comes to implementing new forms of workplace technologies (Richter et al. 2018), including AI-based Digital Assistants (Maedche et al. 2019). Participatory and agile approaches are suggested to allow for identifying and analyzing human work practices (Richter et al. 2018) in order to achieve workplace improvements. Favourable work design characteristics, that include motivational, social and contextual factors, form the basis for positive work outcomes (e.g. performance and well-being) and are mediated by psychological states, such as experienced meaningfulness (see Figure 1). Well-being also includes, for instance, the prevention of technostress, which otherwise may negatively influence the individual's habits and performance, as shown by e.g. Laumer, Maier, and Weitzel (2017); Maier et al. 2019 and Tarafdar et al. (2019).

While research has shown that employees' experiences of such work design characteristics lead to certain work outcomes (e.g. Richter et al. 2018), it has not been investigated, if, based on management-provided information about upcoming technological changes in the workplace, employees form expectations about probable work design characteristics as well as the probable work outcomes, and how these expectations influence their attitude and support intentions (see Figure 2). In this paper, we argue that imagined, or expected, work outcomes depend on the expectations formed about work design characteristics. We further argue that expected work outcomes influence an employee's attitudes towards the transformation of the work environment, consequently determining the individual's willingness to actively support the change process.

An employee that actively supports the transformation, for example by voluntarily and pro-actively providing feedback about the planned workplace design, is a necessary prerequisite for a successful workplace transformation and has at least two beneficial side-effects. First, based on employees' active participation, the resulting workplace will be better designed (Richter et al. 2018). And second, active participation and involvement in the change process may lower the risk of IT resistance, or, in other words, increase the chance of IT acceptance. Employees, so we argue in this paper, that have made personal investments into the anticipated workplace design in one way or another, are likely to support the transformational efforts. Their active support is crucial for digital transformation strategies to



**Figure 1.** Work design characteristics and work outcomes (Humphrey, Nahrgang, and Morgeson 2007; Richter et al. 2018).



**Figure 2.** Theoretical perspective on the elicitation of employee support towards digital workplace transformation.

take a hold in organisations (Barrett and Oborn 2013; Tavakoli, Schlagwein, and Schoder 2017).

In this context, we believe that self-determination theory, which emphasises an individual's needs for autonomy, competence and relatedness, provides an important anchor point that aids understanding perceptions and expectations towards work design characteristics and subsequent work outcomes. Self-determination, as a macro-level theory, is well suited as it consists of various micro-theories about human motivation. It is based on the assumption that all human beings, across all cultures and settings, have three fundamental and universal psychological needs: the need for autonomy, competence, and relatedness (Deci and Ryan 1985). While the need for autonomy describes an individual's 'sense of choice in initiating and regulating one's own actions' (Deci, Connell, and Ryan 1989, 580), the need for competence captures an individual's confidence in pursuing and effectively mastering activities in his or her purview (Deci and Ryan 1985); and the need for relatedness captures an individual's sense of connectedness with significant others that share the same values (Deci et al. 1991).

All three psychological needs play out in our daily lives and are also observable in the workplace (Deci, Olafsen, and Ryan 2017). Employees are driven by the need for autonomy, competence and relatedness that are based on individual orientations and aspirations for the task or job as well as the contexts of the workplace. Levels of need fulfilment, hence, determine levels of motivation, both intrinsic and extrinsic. They also lay the foundation for satisfaction levels to form (Deci,

Olafsen, and Ryan 2017). Motivations, in turn, have a significant effect on the quality and quantity of work behaviours, for instance regarding the voluntary sharing of knowledge between employees (Lin and Lee 2004; Lin 2007), and determine levels of health and wellness (Deci, Olafsen, and Ryan 2017).

### 3.1. The need for autonomy in the digital workplace

Autonomy can be understood as a 'sense of choice in initiating and regulating one's own actions' (Deci, Connell, and Ryan 1989, 580). Studies have shown that autonomy increases work as well as learning performance of individuals (Arshadi 2010; Jeno and Diseth 2014). In fact, if management practices are void of providing autonomy or freedom in the workplace, it leads to low levels of organisational performance and creativity (Khedhaouria, Belbaly, and Benbya 2014). Moreover, research also has shown a positive influence between autonomy and users' attempts to innovate with IT, in turn supporting new ways of work (Deng and Joshi 2016). Hence, it is hypothesised:

H1a: Expected autonomy positively influences performance expectations in the digital workplace.

Autonomy also leads to increased levels of user satisfaction and enjoyment (Kim, Chen, and Zhang 2016), which, in turn, can have a positive influence on individuals' engagement with virtual worlds (Jung 2011; Ozkara, Ozmen, and Kim 2016, 855). The linkage between autonomy and enjoyment has also been shown in an



experiment where researchers manipulated video game characteristics related to autonomy and showed its positive impact on enjoyment (Tamborini et al. 2010, 769). In order to fuel the desire to work, managers should always provide a set of options to safeguard intrinsic motivation, regardless of how minimal the leeway of free choice actually is (Meng and Ma 2015, 446). Therefore, it is hypothesised:

H1b: Expected autonomy positively influences well-being expectations in the digital workplace.

### **3.2. The need for competence in the digital workplace**

Competence ‘involves understanding how to attain various external and internal outcomes and being efficacious in performing the requisite actions’ (Deci et al. 1991, 327). In instances where managers fail to communicate external cues like feedback, workers are not able to satisfy their need for competence (Hagger, Koch, and Chatzisarantis 2014). Competence has been found to be positively related to an individual’s personal accomplishments (Van den Broeck et al. 2010, 996; Fernet et al. 2013). Competence is positively related to task interest (Renninger and Hidi 2002; Schiefele 2009) and has been shown to have a strong correlation with the overall work-related performance, as shown in a meta-analysis of 114 studies by Stajkovic and Luthans (1998). Against this backdrop, in this paper it is assumed that the users’ perception of competence when using the digital tools in the work environment will also affect his or her performance. Hence, it is posited:

H2a: Expected competence positively influences performance expectations in the digital workplace.

At the same time, the need for competence not only has an impact on performance levels, but also on perceptions of well-being (Deci, Olafsen, and Ryan 2017). For example, a study of competitive behaviours in the gaming context has argued that well-being can be achieved by increasing players’ perceived competence (Tauer and Harackiewicz 1999; Przybylski, Ryan, and Rigby 2009; Przybylski et al. 2014). Likewise, studies in physical education have shown that perceptions of competence lead to an increased activity enjoyment (McCarthy, Jones, and Clark-Carter 2008; Cairney et al. 2012). Hence, it is argued that when employees feel capable of mastering tasks on their own in a new digital working environment, it impacts their enjoyment. Therefore, it is hypothesised:

H2b: Expected competence positively influences well-being expectations in the digital workplace.

### **3.3. The need for relatedness in the digital workplace**

The need for relatedness refers to an individual’s urge to have a sense of connectedness with significant others, to belong to a group that shares the same values, and to maintain good social relations (Deci et al. 1991; Lee, Lee, and Hwang 2015). Employee connectedness thereby entails all forms of communication or social exchange within the organisation, whereas responsive leadership comprises all management initiatives aimed at maintaining and enhancing a fruitful work (Dery, Sebastian, and van der Meulen 2017). Likewise, social connectedness in digital work environments has been shown to have a significant influence on an individual’s performance (Kuegler et al. 2015). That is because, as employees become more socially connected, they exchange more information and knowledge amongst each other (Karoui, Dudezert, and Leidner 2015). It is therefore proposed:

H3a: Expected relatedness positively influences performance expectations in the digital workplace.

A sense of connectedness with others has also a positive effect on enjoyment. Positive emotions have shown to emerge from interpersonal relatedness. They increase an individual’s well-being (Reis et al. 2000) and are positively related to happiness (Mogilner 2010; Satıcı, Uysal, and Deniz 2016). Workers feel accomplished if they are confident and enabled to solve problems. Additionally, employees also derive enjoyment from the altruistic need of helping others (Wasko and Faraj 2000, 2005). Based on these findings and referring to the context of digital workplace transformation, it is argued that he or she will exhibit heightened levels of enjoyment when using new technologies in his or her work environment that support employees feeling connected with peers and supervisors. Hence, it is proposed:

H3b: Expected relatedness positively influences well-being expectations in the digital workplace.

### **3.4. Predicting employees’ pro-active support towards digital workplace transformation**

Defined as a ‘psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor’ (Eagly and Chaiken 1993, 1), attitudes have been the object of a vast body of IS research, including the Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), and corresponding theories. The belief that new technology increases a user’s performance has been shown to be one of the most important antecedents of attitude towards acceptance and usage of such technology (e.g. Eighmey 1997; Jarvenpaa

and Todd 1997; Johnson, Zinkhan, and Ayala 1998; Dabholkar and Bagozzi 2002; Koufaris 2002; Xu, Benbasat, and Cenfetelli 2013). In the case company of this paper, it is assumed that the performance expectancy regarding an array of new tools at the workplace has a significant influence on the users' attitude towards digital transformation of the workplace. Hence, it is hypothesised:

H4: Performance expectations in the digital workplace is positively correlated with attitudes towards digital workplace transformation.

Particularly in private contexts, ranging from online shopping (Stafford and Stafford 2001), music streaming (Chu and Lu 2007) or participating in social networking (Tscherning and Mathiassen 2010), enjoyment has been found to be an important determinant for adopting new technologies (Lowry, Gaskin, and Moody 2015). Compared to the plethora of studies in the personal context, surprisingly few studies exist that look at hedonic motivations in work environments. For example, a study of personal computer usage at work has shown that enjoyment has an influential role on attitudes (Davis, Bagozzi, and Warshaw 1992). It is therefore expected that an employee's evaluation of digital tools as a means to higher levels of performance in the work environment has a significant impact on his or her attitude towards digital transformation of the workplace. Hence, it is posited:

H5: Well-being expectations in the digital workplace is positively correlated with attitudes towards digital workplace transformation.

Studies based on the theory of planned behaviour proved that attitude, together with subjective norm and perceived behavioural control, is one of the most important predictors for an individual's behavioural intention (Ajzen and Fishbein 1977; Davis, Bagozzi, and Warshaw 1989; Lin 2007; Lin 2011). However, while intentions to use technology has been a widely studied variable in the technology adoption literature in its ability to predict actual usage behaviours, it might fall short in explaining why some technologies lead to successful organisational outcomes while others fail. One such aspect, so the IS literature found, is the degree of user involvement in the implementation process (Lee and Lee 2004; Shatat 2015; Kaschig, Maier, and Sandow 2016). Research has pointed at agility performance, which captures an employee's proactivity in 'conducting activities that positively affect the changing environment' (Cai et al. 2018, 56) and is the outcome of a psychological state that favours change. Therefore, a new construct is proposed, that of intentions to actively support the digital

transformation and change process. It captures the willingness of an employee to play an active role in the transformational process by dedicating effort and time. However, so it is argued in this paper, employees' willingness to actively support the change process is only possible if favourable attitudes exist towards the change process and digital technologies in general. It is therefore proposed:

H6: Attitudes towards digital workplace transformation are positively correlated with an employee's intentions to actively support the digital workplace transformation.

Figure 3 summarises our research model.

## 4. Research design

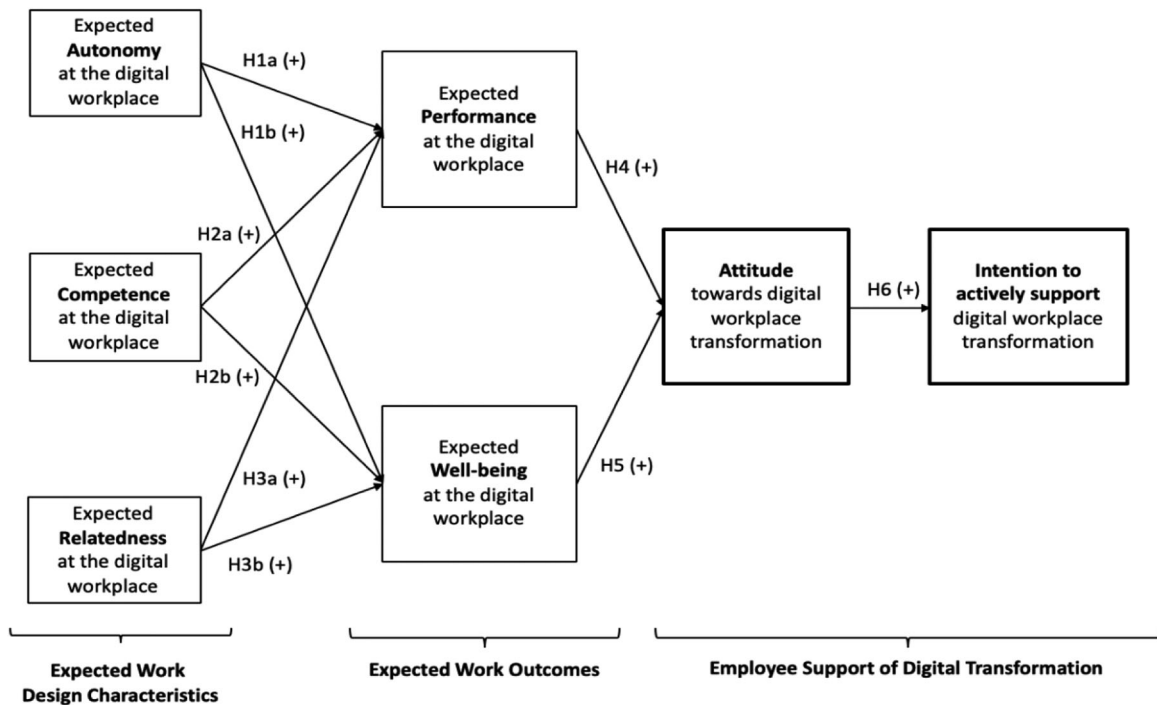
### 4.1. Context information

In order to find support for our hypotheses, a case-based survey was conducted in a subsidiary of a global enterprise, employing over 150,000 employees in the whole-sale industry. The enterprise is headquartered in Germany and can be characterised as a small to medium sized company.

In late 2017, and as part of a global initiative, the parent company, in an attempt to increase the company's effectiveness as well as employee engagement, evaluated the existing work environment. The evaluation included an analysis of the IT infrastructure as well as joint discussions with employees about their technological working environment. Based on those findings, management developed a plan for modernising the workplace over the next four years. As part of this global initiative, the digital transformation of the workplace in the case company was casted as a pilot project. Should the pilot project turn out to be successful, the parent company's plans envisioned a company-wide roll-out.

The subsidiary, employing 226 employees, is responsible for business-to-business and business-to-consumer advertising, serving other subsidiaries as well as the parent company. Services included, for example, running targeted marketing campaigns to promote the parent company's product portfolio. Technologies at the workplace had not changed significantly over the last two decades. Most employees used desktop computers running Windows XP and older, along with Microsoft Office for documenting and calculation tasks. E-mail was considered a rather sophisticated means of digital communication. Many texts and memos were still exchanged in a paper-based manner. At some offices, typewriters from the 1980s were still in use.

The workplace transformation project envisioned a situation in which all tasks as well as communication



**Figure 3.** Research model.

and collaboration efforts between employees would be digitally integrated. Apart from e-mail, a vast array of technologies was planned to take effect: enhanced communication abilities, including video conferencing features through Skype for Business; enterprise social network tools (such as IBM Connections, Jive, or Yammer), allowing to connect and form relationships with colleagues; a project management software tool, allowing project members to simultaneously work on tasks and to provide a transparent overview of a project's progress; as well as collaborative text editing tools (such as Microsoft OneDrive or Google Drive), allowing individuals to share and jointly modify files. Desktop computers were to be substituted with new laptops, allowing for more flexible work models (Al-Dabbagh et al. 2015; Carillo, Scornavacca, and Za 2017), including home office work; and meetings were planned to be held virtually in the future via video conferencing tools. Management's plan regarding the modernisation of the workplace was disseminated not only via e-mail and paper-based memos, but also through meetings and joint workshops. Our survey was conducted right before the digital workplace transformation project kicked off.

#### 4.2. Measurement of variables

Participation in the survey was optional. The survey was prefaced with a summary of the above-described plan to digitally modernise the workplace, along with a definition of the term of a digitally transformed

workplace. All constructs measured used validated scales from prior research, except for our outcome variable: an individual's intention to actively support the digital workplace transformation. For the latter, we developed measurement items following the guidelines by Straub (1989). Existing literature (e.g. Barrett and Oborn 2013; Tavakoli, Schlagwein, and Schoder 2017), and our own definition of digital workplace definition, shows that such transformation comes with significant changes. Hence, the developed construct aimed at capturing the support of corresponding change through, for instance, an employee's constructive and proactive feedback. First, an initial item pool was established, which was systematically evaluated and successively refined in three half-day workshops with four academic researchers (Cronbach 1971). During these workshops, participants were asked to rate the level of fit for each item in relation to the construct under question. Equipped with a modified set of items, a half-day workshop with ten employees from the entry-, mid- and senior management level at the case company was conducted, soliciting feedback from individuals familiar with the contextual understanding of the construct. The feedback showed that the finalised set of items provided a good fit.

Other variables, including autonomy, competence and relatedness, were measured based on the works by Deci et al. (2001) and Spreitzer (1995). While autonomy captures the degree to which an individual expects being able to engage with all tools of the digitally transformed



workplace in a self-determined way, competence captures the degree to which an individual expects to have confidence in his or her abilities to effectively master activities in his or her digital work environment. Relatedness, on the other hand, captures the degree to which the digitally transformed workplace is expected to lead to a sense of connectedness with other colleagues in the organisation.

Other variables included measures of performance, well-being as well as attitudes towards digital transformation. Performance expectancy, capturing the degree to which an individual expects the digital work environment being supportive for his or her productivity and efficiency, was measured as proposed by Venkatesh et al. (2003). Well-being, in our study capturing the degree to which an individual expects engaging with the digital work environment as being enjoyable and fun, was measured as proposed by Agarwal and Karahanna (2000). Attitude towards the digital transformation of the workplace, capturing an individual's tendency to evaluate the transformation with some degree of favour, was measured as proposed by Venkatesh et al. (2003).

Each of the constructs used a five-point Likert scale, ranging from 'strongly disagree' (1) to 'strongly agree' (5). Measurement items are displayed in Table 1.

## 5. Results

### 5.1. Descriptive statistics

The quantitative survey was sent out to all 226 employees via e-mail, of which 149 employees participated (66%). The ratio of females to males was mostly balanced with 46% females and 54% males. About 53% of participants were older than 40 years. The majority of participants had been with the company for more than six years (58%), about a third (or 27%) had been working for the company between 1 and 5 years, and about 15% had only recently joined. Out of all employees, 23% were assigned staff responsibilities. Table 2 provides a detailed summary of the demographic data.

### 5.2. Measurement model analysis

Partial least squares structural equation modeling (PLS-SEM) was applied, using SmartPLS 3.2.7 (Ringle, Wende, and Becker 2015). All constructs were modelled as reflective measures with their respective indicators. To evaluate the statistical validity of the constructs, different criteria to assess convergent validity were applied (Fornell and Larcker 1981). First, the average variance

**Table 1.** Measurement items.

	Construct	Source
Autonomy (AU)		
AU1	I feel like I could decide to which extent I would like to use the digitally transformed workplace.	Deci et al. (2001) and Spreitzer (1995)
AU2	I feel like I can pretty much be myself when working at the digitally transformed workplace.	
AU3	There are many opportunities for me to decide for myself how I use the digitally transformed workplace.	
Competence (CO)		
CO1	I would not feel very competent when I was using the digitally transformed workplace. (reverse coded)	Deci et al. (2001) and Spreitzer (1995)
CO2	At the digitally transformed workplace, I would get many chances to show my capabilities.	
CO3	When working with at digitally transformed workplace, I would often feel very capable.	
Relatedness (RE)		
RE1	People in the digital work environment would be pretty friendly towards me.	Deci et al. (2001) and Spreitzer (1995)
RE2	I would really like the people I would be working with in the digital work environment.	
RE3	I would get along with the people in my digital work environment.	
Performance (PE)		
PE1	I would find the digitally transformed workplace useful in my job.	Venkatesh et al. (2003)
PE2	Using the digitally transformed workplace would help me to achieve goals that are important to me.	
PE3	Using the digitally transformed workplace would enable me to accomplish tasks more quickly.	
PE4	Using the digitally transformed workplace would increase my productivity.	
Well-being (WB)		
WB1	I would have fun using the digitally transformed workplace.	Agarwal and Karahanna (2000)
WB2	Using the digitally transformed workplace would provide me with a lot of enjoyment.	
WB3	I would enjoy using the digitally transformed workplace.	
WB4	Using the digitally transformed workplace would bore me. (reverse coded)	
Attitude towards digital transformation (AT)		
AT1	To digitally transform the workplace is a good idea.	Venkatesh et al. (2003)
AT2	I would like it, to work in a digitally transformed work environment	
AT3	A digitally transformed workplace would make my work more interesting.	
Intention to actively support digital workplace transformation (SU)		
SU1	I intend to actively support the change process towards a digitally transformed workplace.	self-developed
SU2	I plan to accompany the change process towards a digitally transformed workplace.	
SU3	I intend to actively participate in the change process towards a digitally transformed workplace.	
SU4	I plan to constructively participate in the change process towards a digitally transformed workplace.	
SU5	I intend to provide proactive feedback regarding the change process towards a digitally transformed workplace.	

**Table 2.** Demographic data.

Gender	N	%
Male	80	54
Female	69	46
Age		
<21	5	3
21–30	29	19
31–40	36	24
41–50	43	29
51–60	30	20
> 60	6	4
Tenure with company	N	%
<1	23	15
1–3	28	19
4–6	12	8
6–10	16	11
>10	70	47
Role		
Staff responsibilities	35	23
No staff responsibilities	114	77

extract-ed (AVE) was calculated for each construct; all exceeded the recommended level of .50 (see Table 3). Second, the composite reliability (CR) of each construct was calculated; all exceeded the recommended level of .70. Third, it was checked if items loaded higher than .70 on their respective construct. All item loadings, except for one item of competence (CO1), loaded lower (.04). However, item CO1 we decided to keep this item because (a) it has been validated by a stream of prior studies; and (b) the AVE for the overall construct was still above .50 (Fornell and Larcker 1981). Reliability measures also exceeded the recommended level of .70, except for competence (due to item CO1 mentioned above).

In order to assess discriminant validity, it was confirmed that the square root of the AVE for each construct was greater than its correlations, as recommended by Fornell and Larcker (1981). In addition, their respective loadings were found to be higher than their cross-loadings (Gefen and Straub 2005) (see Appendix 1, Table A1). Multicollinearity was not an issue as the variance inflation factors (VIF) ranged between 1.00 and 2.52 and were hence lower than the suggested threshold of 5.00 (Menard 1995). Moreover, since all VIF values resulting from the multicollinearity test are below the threshold of 3.3, the model can be considered free of common method bias (Kock 2015).

### 5.3. Structural model analysis

We employed bootstrapping (two-tailed) with 5000 samples to obtain the path coefficients, measures of significances, and determination coefficients. Autonomy shows significant and positive effects on performance ( $\beta = .36$ ;  $p < .001$ ) and well-being expectancy ( $\beta = .34$ ;  $p < .001$ ), supporting hypotheses 1a and 1b. Similarly, competence shows significant and positive effects on performance ( $\beta = .26$ ;  $p < .001$ ) and well-being expectancy ( $\beta = .28$ ;  $p < .01$ ), supporting hypotheses 2a and 2b. And likewise, relatedness shows significant and positive effects on both performance ( $\beta = .24$ ;  $p < .001$ ) and well-being expectancy ( $\beta = .22$ ;  $p < .01$ ), supporting hypotheses 3a and 3b.

Autonomy, relatedness and competence account for 52% of the variance of performance expectancy and for 51% of the variance of well-being expectancy. Explaining 73% of the variance, performance ( $\beta = .46$ ;  $p < .001$ ) and well-being expectancy ( $\beta = .45$ ;  $p < .001$ ) show significant and positive effects on attitudes towards digital transformation of the workplace, supporting hypotheses 4 and 5. Finally, and accounting for 45% of the variance, attitudes have a significant and positive effect on the intention to actively support digital workplace transformation ( $\beta = .67$ ;  $p < .001$ ), supporting hypothesis 6.

In sum, all nine hypotheses were supported. An overview of our structural model is displayed in the Figure 4.

Overall, autonomy was the strongest predictor for both performance and well-being expectancy, followed by competence and relatedness. Performance expectancy and well-being expectancy contributed almost equally to attitudes towards digital transformation, which, in turn, had a significant impact on intentions to actively support the transformation and corresponding change. As shown in Appendix 1, Table A2, all direct effects are higher than their indirect effects.

To assess the statistical power of our data, we analysed the effect size by calculating Cohen's  $f^2$ . Cohen (1988) suggests the following criteria for interpreting effect sizes: (1)  $.02 < f^2 \leq .15$  for small effect sizes; (2)  $.15 < f^2 \leq .35$  for medium effect sizes; and (3)  $f^2 > .35$  for large effect sizes. With regards to performance

**Table 3.** Measurement model analysis and inter-construct correlations.

	Mean	SD	AVE	CR	AU	CO	RE	EP	WB	AT	SU	US
AU	2.96	1.04	.75	.90	<b>.84</b>							
CO	3.19	.88	.71	.88	.64	<b>.77</b>						
RE	2.85	.91	.59	.75	.50	.53	<b>.87</b>					
PE	3.74	.99	.78	.94	.64	.61	.55	<b>.89</b>				
WB	3.42	1.08	.82	.95	.63	.61	.54	.78	<b>.91</b>			
AT	3.68	1.17	.87	.95	.63	.60	.53	.81	.80	<b>.93</b>		
SU	3.98	1.04	.86	.97	.55	.41	.38	.69	.66	.57	<b>.93</b>	

SD = standard deviation, AVE = average variance extracted, CR = composite reliability, AU = autonomy, RE = relatedness, CO = competence, PE = performance, WB = well-being, AT = attitude towards digital workplace transformation, SU = intention to actively support digital workplace transformation.

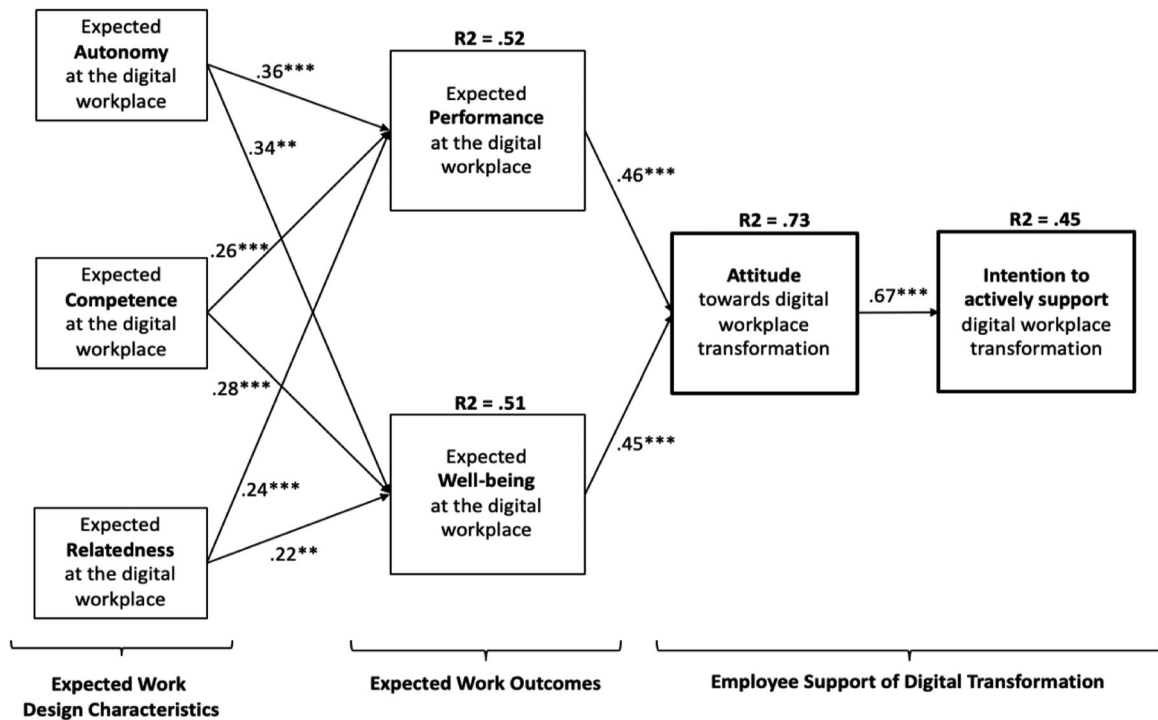


Figure 4. Research model results.

expectancy, a medium effect size was found for autonomy (0.15), followed by small effect sizes of competence (.08) and relatedness (0.08). With regards to well-being expectancy, autonomy had a small effect (.13) when compared to competence (.08) and relatedness (.07) with large effect sizes. With regards to attitudes, medium statistical power was found for performance expectancy as well as well-being expectancy (both .30). And lastly, attitudes showed a large statistical effect (.82) on intentions to actively support digital workplace transformation.

In addition, we analysed the predictive relevance of our model by applying a Stone-Geisser test (Q2) to assess how well the data can be reproduced by the PLS model. The Q2 values for performance (.38), well-being (.39), attitude (.59) and intention to support digital transformation (.35) were positive, indicating significant predictive relevance (Fornell and Bookstein 1982).

## 6. Discussion

Our study shows that pro-active employees are ripe for workplace transformation. Those employees have a positive attitude toward workplace transformation in general, they are willing to actively participate in the upcoming transformation process. This is in line with the Theory of Planned Behavior, which states that attitude is an important predictor for an individual's intentions (Ajzen and Fishbein 1977; Lin 2007; Lin 2011). In

our case, and driven by the employees belief that a new digital workplace is not only useful but can potentially bring well-being to their work life, they anticipate a heightened sense of autonomy, competence and relatedness. In other words, they feel sufficiently confident in their ability to master the new digital environment; they also feel a sense of empowerment about making their own decisions with regards to their work; and they also believe that the transformation will create an environment that helps them stay connected with others. In the following, we will discuss in more detail important work design characteristic for organisations, their influence on expected work outcomes and subsequent intentions to support a digital workplace transformation.

### 6.1. Autonomy equals technological decision-making

This idea of autonomy fits neatly with other studies that have looked at the relative advantage of one technology over another (Moore and Benbasat 1991; Choudhury and Karahanna 2008). Having an array of tools available prompts employees to act autonomously. It will prompt them to choose between existing technologies and new ones once the implementation is underway (e.g. using instant messaging instead of traditional email); it might also prompt them to choose amongst tools within the new set of technologies (e.g. using instant messaging or Skype to get in touch with a colleague). Traditional

research on IS use in the workplace has been guided by the assumption that IT departments sanction and mandate the tools to be used by employees (Brown et al. 2002). Our data shows that autonomy in decision-making is a strong predictor for perceptions of performance and well-being. Acting on one's own, and deciding how to go about work in general and work task in particular, is a vital component for employees to embrace the digital workplace.

Likewise, for management it is equally important to leave enough freedom and room for employees to make decisions about their own work processes. Only when employees experience a sense of autonomy can those expectations be met.

## **6.2. Competence equals technological prowess**

Our study also shows that the technological confidence that employees display is a strong predictor of perceptions of performance and well-being, and determines their attitudes towards the digital workplace. Competence, sometimes referred to as self-efficacy, has been found to be related to an individual's personal accomplishment (Fernet et al. 2013) and performance (Locke 1991). It has also been found to be associated with effort and persistence (Bandura 1989), as well as proactive behaviours and behaviours of experimentation (Thomas and Velthouse 1990; Spreitzer 1995). Individuals that feel competent in using technologies of the digital workplace might therefore not only use the technology, but explore technology in novel ways. In fact, in recent years, the research focus has moved from the study of 'use' to the study of 'effective use' (Burton-Jones and Grange 2008). Building confidence, either through group training sessions during implementation or targeted coaching after the fact, could therefore be a way of getting individuals to use digital workplace technologies most effectively.

For management this means to meticulously plan and execute digital workplace strategies to exploit the new technologies for better outcomes.

## **6.3. Relatedness equals technology-facilitated social belonging**

Our study also shows that technologies of the digital workplace have to provide levels of relatedness, or a sense of connectedness, in order to prompt a positive attitude among employees. Feeling connected with and to others is of vital importance for future workplaces. This notion of relatedness also fits in with studies that have looked at technology sociability, or the 'degree to which an individual's desire to socialize is satisfied

through a system that is able to provide social interactions with others' (Junglas et al. 2013). It also fits in with attachment motivation theory (Baumeister and Leary 1995; Li, Chau, and Lou 2005), which asserts that attachment to others is critical for an individual's well-being.

Outside the workplace, a human's urge to be part of a group, to interact and communicate is being met by an abundance of technologies. Social media applications have achieved a high user basis, with more than 2.2 billion active users on Facebook in 2017 (Statista 2018a) and 330 million active users on Twitter (Statista 2018b). Inside the workplace, employees' desire to communicate and collaborate with others can be met by similar platforms that allow for collaborations between individuals and across workgroups (as also suggested by e.g. Riemer, Stieglitz, and Meske 2015; Meske et al. 2016; Cetto et al. 2018; Meske, Junglas, and Stieglitz 2019; Meske, Wilms, and Stieglitz 2019), using, for example, instant messaging, enterprise social networks such as Yammer, or even wikis. These technologies also enable internal crowdwork, which can lead to outstanding results and competitive advantages of the organisation (vom Brocke et al. 2018). For management it is important to note that simply providing task-related functionality when introducing a digital workplace environment is not sufficient – equally important is the addition of functionalities that facilitate relatedness as it will boost the desire of employees to support the transformation.

## **6.4. Personal experiences blur experiences with enterprise technology**

This overly positive disposition towards a digital workplace can only be partially explained by the existing workplace toolset, or the lack thereof. Employees are mostly equipped with desktops, not laptops; phones are desk phones, not mobile phones. Apart from calling, email is the standard way of communicating, and the majority of meetings are held in person. However, the workplace technologies in use are, by no means, ill-fitting for the work tasks at hand (Goodhue and Thompson 1995), nor are they misaligned with the company's overall business objectives (Henderson and Venkatraman 1993). IT spending in the retail/wholesale industry is chronically low (at around 1.4%) – and investments into workplace digitisation are even lower (Gartner 2016).

Rather, we believe that the IT consumerisation trend, sometimes also termed as BYOD, might have contributed to the level of expectation that employees place on these new workplace technologies (Harris, Ives, and



Junglas 2012; Köffer et al. 2014). Experiences made in the personal realm might have transpired into the professional realm. Seeing what is possible outside the workplace might have laid the foundation for employees to form a level of competence about their abilities. Experiencing technologies outside the organisation may also have contributed to employees' level of autonomy and their willingness to make their own work decisions when faced with new technology. It may also have contributed to an understanding that new technologies, particularly that of social networks, can facilitate relationships with others in the workplace.

### **6.5. The supporting nature of employees in the digital transformation process**

Facets of activism transpired: employees wanted to be an active part of the change process. Given that prior research points toward less favourable attitudes towards organisational changes in general (Dent and Goldberg 1999; Piderit 2000; Ford, Ford, and D'Amelio 2008; Schmid, Recker, and vom Brocke 2017), we were somewhat surprised by the level of participatory involvement that individuals were seeking. Our empirical study has shown that employees' intentions to actively support the change process were acutely high. The average value was 3.98, indicating that employees not only wanted to actively support and participate in the transformational process, but also to be an active member in constructing the new environment and providing feedback.

Conceptually, and as empirically validated, intentions to actively support differ from usage intentions. The fact that employees want to actively participate in the transformational process is sufficient to using a technology. Since extant studies have also demonstrated the importance of user involvement as part of a successful implementation process (e.g. Lee and Lee 2004; Shatat 2015), considering users' intentions to actively support a technology seems only appropriate. Intentions to actively support not only capture a variable that management can measure, but one that it is able to influence. For example, organisations might want to consider providing outlets for suggestions early on and, if employees are willing, an easy way to formalise their participation in the design and implementation process.

## **7. Conclusion and outlook to further research**

This study shows that to increase users' positive attitude towards transformational projects, and consequently the willing to actively support corresponding changes, digital workplace transformation should not just be about

technology – it is about enabling a workforce to feel competent, autonomous and connected with others. This paper contributes first by introducing the term digital workplace transformation and hence a micro perspective to the stream of digital transformation research. Second, the paper contributes to theory by proving the relevance of self-determination for employees' performance and well-being in knowledge-centric work environments. Third, a new construct to capture users' intention to engage in IT-induced change processes was established and successfully tested.

As every study, our study also has limitations. In order to achieve high reliability and to exclude confounding variables introduced by the homogeneity of organisational contexts, we focused on one company only. In that sense, we bought internal consistency at the expense of generalisability. Also, our study solely used intentions as its dependent variable. While we acknowledge the shortcomings associated with this choice (Polites, Karahanna, and Seligman 2018), it was inevitable. Our work shows, that if the given information at the beginning of a digital transformation project, where actual behaviour is still uncertain, does not address the basic needs of employees (autonomy, relatedness, competence at the workplace), there will be no positive attitude and consequent intentions to support, hence decreasing the theoretical possibility to observe supporting behaviour at all.

Further research should add to the micro-level perspective of digital transformation to uncover the manifold influences on digital workplace environments and corresponding routines. Scholars should test the applicability of our research model in companies with different cultures and/or different levels of organisational digitalisation. Also, future research could benefit from testing further variables that may influence users' intention to actively support IT-induced change and therefore the success of corresponding transformation projects. Also, the downsides of digital workplace transformation should be considered in future studies, for instance, in relation to technostress. From a theoretical perspective, future research may also compare or even partially integrate self-determination theory with other theories that provide similar antecedents of human motivation and behaviour, such as social cognitive theory.

### **Disclosure statement**

No potential conflict of interest was reported by the author(s).

### **ORCID**

Christian Meske  <http://orcid.org/0000-0001-5637-9433>

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## Appendix 1

**Table A1.** Item factor loadings and cross-loadings.

	AU	CO	RE	EP	EN	AT	SU	US
AU1	<b>.85</b>	.47	.37	.53	.53	.51	.50	.42
AU2	<b>.78</b>	.58	.46	.50	.51	.51	.37	.41
AU3	<b>.89</b>	.57	.44	.59	.56	.57	.52	.59
CO1	.08	<b>.04</b>	.03	.13	.16	.09	.13	.23
CO2	.57	<b>.94</b>	.53	.55	.56	.58	.37	.43
CO3	.62	<b>.94</b>	.46	.58	.56	.53	.37	.41
RE1	.40	.46	<b>.89</b>	.45	.38	.43	.25	.37
RE2	.43	.43	<b>.88</b>	.44	.45	.42	.32	.36
RE3	.46	.48	<b>.84</b>	.54	.55	.51	.41	.46
PE1	.58	.54	.49	<b>.91</b>	.75	.82	.70	.73
PE2	.61	.68	.44	<b>.83</b>	.64	.64	.57	.60
PE3	.50	.46	.53	<b>.90</b>	.64	.67	.61	.58
PE4	.58	.49	.50	<b>.91</b>	.70	.71	.56	.60
WB1	.57	.57	.54	.70	<b>.94</b>	.72	.60	.56
WB2	.62	.60	.55	.73	<b>.96</b>	.75	.62	.59
WB3	.63	.60	.53	.74	<b>.95</b>	.76	.62	.59
WB4	.45	.44	.31	.64	<b>.76</b>	.69	.54	.66
AT1	.59	.54	.47	.79	.74	<b>.94</b>	.68	.68
AT2	.60	.55	.47	.77	.79	<b>.96</b>	.68	.71
AT3	.58	.59	.55	.68	.71	<b>.89</b>	.50	.56
SU1	.59	.43	.37	.72	.71	.71	<b>.92</b>	.71
SU2	.53	.42	.37	.64	.63	.68	<b>.96</b>	.62
SU3	.55	.38	.37	.62	.61	.63	<b>.95</b>	.60
SU4	.47	.37	.38	.62	.58	.56	<b>.95</b>	.56
SU5	.40	.29	.29	.57	.51	.50	<b>.87</b>	.51

AU = autonomy, RE = relatedness, CO = competence, PE = performance, WB = well-being, AT = attitude towards digital workplace transformation, SU = intention to actively support digital workplace transformation.

**Table A2.** Direct and indirect effects.

Predictor	Outcome	Standardised $\beta$	Standard Error	t-value	p-value
<i>Direct effects</i>					
AU	PE	.36	.07	4.87	.000
AU	WB	.34	.09	3.94	.000
CO	PE	.26	.08	3.38	.001
CO	WB	.28	.09	2.93	.003
RE	PE	.24	.07	3.41	.001
RE	WB	.22	.07	2.96	.003
PE	AT	.46	.07	6.50	.000
WB	AT	.45	.08	5.48	.000
AT	SU	.67	.06	11.54	.000
<i>Indirect effects</i>					
AU	AT	.32	.07	4.91	.000
AU	SU	.21	.05	4.28	.000
RE	AT	.21	.06	3.53	.000
RE	SU	.14	.04	3.21	.000
CO	AT	.24	.07	3.38	.001
CO	SU	.16	.05	3.12	.002
PE	SU	.31	.06	5.28	.000
WB	SU	.30	.06	4.87	.000

AU = autonomy, RE = relatedness, CO = competence, PE = performance, WB = well-being, AT = attitude towards digital workplace transformation, SU = intention to actively support digital workplace transformation.